Test Bank for Operations Management for Business Excellence - Building Sustainable Supply Chains 4th Gardiner

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Operations management questions of forecasting

1 Forecasting theory

(a) Provide three questions that should be considered when developing the objectives of a forecast.

(b) Name three different models that could be developed and testing during the forecasting process.

(c) What does 'applying the model', mean?

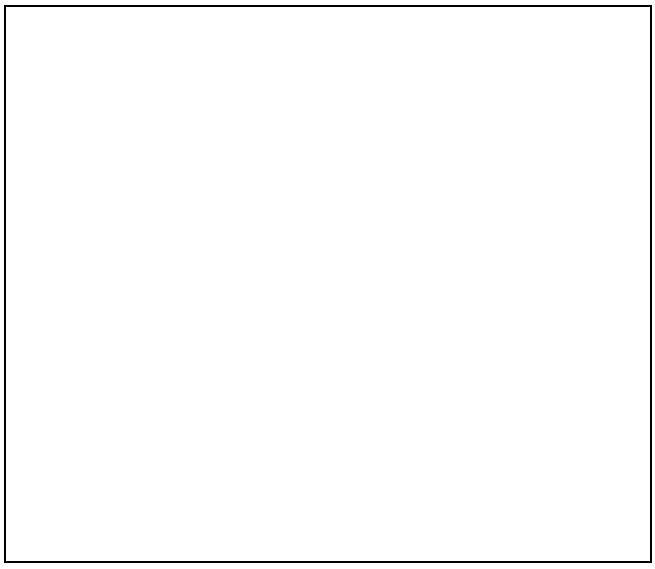
(d) Explain using an example the forecasting step 'considering real-world constraints on the model's application'.

(e) Explain how one might 'revise and evaluate the forecast'.

(f) What is the most important rule of forecasting, and what should we be trying to achieve?

2 Regression analysis

The actual number of guests staying at an exclusive lodge has been as follows:



1. Calculate seasonal indices using the above data.
2. Deseasonalise the above data, and determine the regression equation.
3. Using the regression equation, determine the forecasts for 2004.

Information Classification: General

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Operations management questions on forecasting

1 Forecasting theory

(a) Provide three questions that should be considered when developing the objectives of a forecast:

- What is the purpose of the forecast?
- What variables are to be forecast?
- Who will use the forecast?
- What is the time frame for the forecast – long or short term?
- How accurate should the forecast be?
- When is the forecast needed?

(b) Name three different models that could be developed and testing during the forecasting process:

- Moving average
- Weighted moving average
- Exponential smoothing
- Regression analysis

(c) What does 'applying the model', mean?

After the model is tested, historical data about the problem are collected. These data are applied to the model, and the forecast is obtained. Great care should be taken so that the proper data are used and the model is applied correctly.

(d) Explain using an example the forecasting step 'considering real-world constraints on the model's application'.

A model may predict that sales will double in the next three years. Management therefore expands the plant, but does not think about the impact this increase will have on the distribution system. What if the company cannot move the increased volume? What about raw material availability, and actions such as price-cutting by competitors.

(e) Explain how one might 'revise and evaluate the forecast'.

The technical forecast should be tempered with human judgement. What relationships might have changed?

(f) What is the most important rule of forecasting, and what should we be trying to achieve?

Forecasts are always wrong, and it is better to plan for this by having a range as a forecast, rather than a definitive number. This will make it easier to have contingency plans drawn up. With forecasting we are trying to minimise the size of the forecast error.

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2 Regression analysis

The actual number of guests staying at an exclusive lodge has been as follows:

Quarter	Year	Actual Guests	Seas. Ave	Seas. Index	Deseas. Demand
Summer	2001	73	75.6667	0.6985	104.5154
Autumn	2001	104	110.6667	1.0215	101.8072
Winter	2001	168	172.3333	1.5908	105.6093
Spring	2001	74	74.6667	0.6892	107.3661
Summer	2002	65		0.6985	93.0617
Autumn	2002	82		1.0215	80.2711
Winter	2002	144		1.5908	90.5222
Spring	2002	52		0.6892	75.4464
Summer	2003	89		0.6985	127.4229
Autumn	2003	146		1.0215	142.9217
Winter	2003	205		1.5908	128.8685
Spring	2003	98		0.6892	142.1875
Total		**1300**			

			Deseas. Forecast	Seas. Forecast
		0.6985	13	130.5345	91
Total Average	108.3333	1.0215	14	133.9500	137
		1.5908	15	137.3655	219
Slope	**3.4155**	0.6892	16	140.7810	97
y-intercept	**86.133**				

Excel tip:

To calculate the regression equation the easiest way to do it is to select the cells you are wishing to examine. In the previous example, select cells I2 to I13. Select the Chart Wizard function, and choose a line graph from the options. You can then select 'Finish' (or add a few 'touches', if you so desire by selecting 'Next').

Once you have the chart on screen, select the chart and the Data menu should change to Chart menu. If you look in here you should be able to 'Add Trendline'. Once the Add Trendline window has appear click on the 'Options' tab, and then selected the checkbox to show the equation on the chart. This should correspond with the data I have in the bottom left-hand corner of my previous worksheet:

1 Calculate seasonal indices using the above data.

2 Deseasonalise the above data, and determine the regression equation.

3 Using the regression equation, determine the forecasts for 2004.

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